

***Oschmarinella macrorchis* sp. n. (Digenea: Campulidae) from the Liver Sinuses of a Beaked Whale, *Mesoplodon stejnegeri* (Cetacea: Ziphiidae)**

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ABSTRACT: *Oschmarinella macrorchis* sp. n. is described from the liver of a beaked whale, *Mesoplodon stejnegeri*. This new species, like other members of the genus *Oschmarinella*, has eggs that are triangular in cross section, intestinal caecae without posterior lateral diverticula, a prepharyngeal pouch, and a uroproct. It is smaller than *O. sobolevi* and larger than *O. laevicaecum* and *O. mascomai* in almost all measurements. Laurer's canal was not observed.

KEY WORDS: Digenea, Campulidae, *Oschmarinella macrorchis* sp. n., beaked whale.

In the course of a study of marine mammal strandings for the Washington State Department of Game, we encountered a number of animals infected with helminth parasites. The present report describes a new species of fluke from the liver sinuses of a beaked whale, *Mesoplodon stejnegeri* True.

Materials and Methods

The host specimen was a live, gravid, near-term beaked whale (*M. stejnegeri*) found stranded 15 October 1981, on the beach of Twin Harbors State Park, 0.8 km. south of Gray's Harbor county line, Washington. The approximate geographical position was 46°48' by 124°6'W. The whale measured 488.9 cm from snout to fluke notch and was estimated to weigh 1,500 kg. The cause of stranding/death was attributed to complications from pregnancy. Immediately at the time of death, fresh tissue samples were taken and transported in a cold ice chest (1 hr) to a laboratory for examination. The fresh, cold liver was dissected, and helminths were found lining the hepatic sinuses but did not appear to have caused any gross damage or necrosis. The liver was not processed for histology. The helminths were recovered from the liver and immediately placed in neutral buffered formalin and stored for further processing.

Worms were dehydrated to 70% ethanol then stained in either Celestine Blue B or Semichon's Acetic-Carmine, dehydrated to 100% ethanol, cleared in clove oil, rinsed in toluene, and mounted in Permount®. Selected worms were embedded in Paraplast®, serial sectioned at 5 µm, and stained with hematoxylin and eosin. Six additional worms were longitudinally or cross sectioned by hand using razor blades. Drawings were made with the aid of a drawing tube. Measurements are in micrometers, with the mean followed by the

range in parentheses; body length and width are in millimeters. Measurements of other species are from the initially published descriptions of those species.

Results

***Oschmarinella macrorchis* sp. n. (Figs. 1–3)**

DESCRIPTION (based on measurements of 20 whole mounts and 53 tissue sections; measurements on 20): Tegument probably spined. Body slender, applanate dorsoventrally, tapering subacutely anteriorly, rounded posteriorly; 18.85 (16–22) mm long by 2.42 (2.2–2.8) mm in maximum width. Oral sucker subterminal, 590 (540–650) in diameter. Acetabulum, 3,020 (2,700–3,700) from anterior end, 530 (480–580) in diameter. Prepharyngeal pouch present, pharynx pear- to flask-shaped, 490 (420–540) long by 300 (250–330) in greatest width. Caeca, with 2 anterior diverticula 600 (450–780) long; posterior limbs joining excretory bladder to form uroproct. Testes 2, lobed, tandem, in midbody third; anterior testis 3,300 (2,200–4,000) long by 1,420 (1,000–1,800) in greatest width; posterior testis 4,190 (3,200–5,000) long by 1,370 (800–2,000) in greatest width. Cirrus pouch curved claviform, extending midway between acetabulum and ovary; cirrus with cuticular papillae at the tip and minute spines (2–4) in length, visible only in sections; prostatic complex present, well developed, internal seminal vesicle large, convoluted, occupying posterior two-thirds of cirrus pouch; external seminal vesicle relatively small, lateral to posterior end of cirrus pouch. Ovary ovoid to lobed, pretesticular, 590 (494–728) in greatest width; ootype and Mehlis' gland pre-

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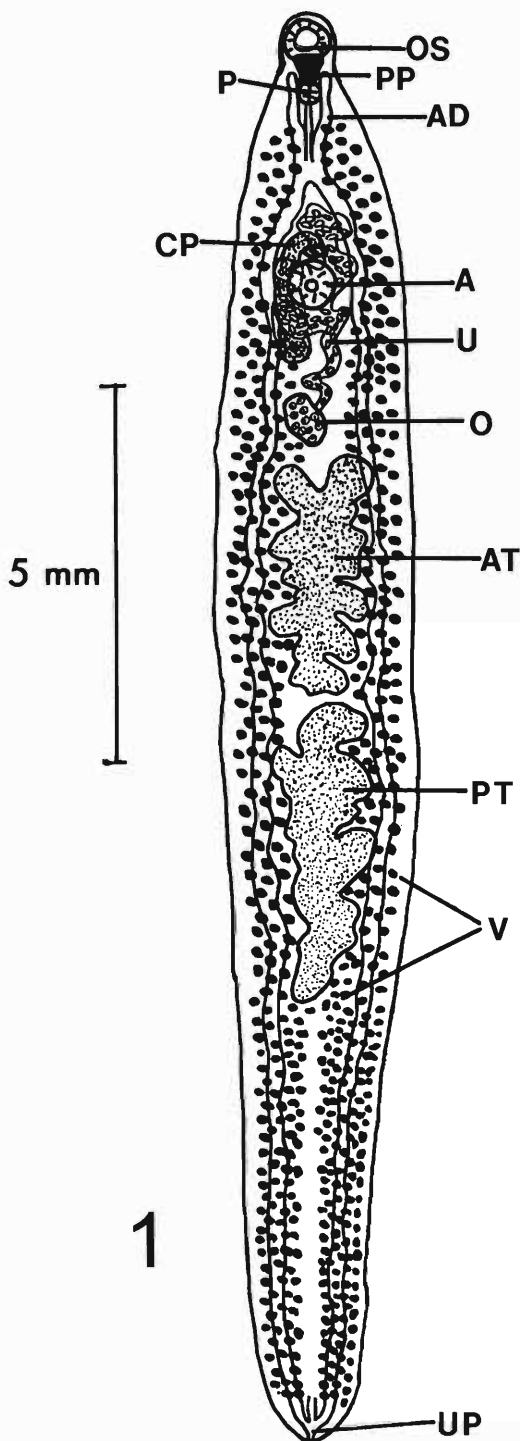


Figure 1. *Oschmarinella macrorchis* sp. n. whole mount, ventral view. A = acetabulum, AD = anterior diverticulum, AT = anterior testis, CP = cirrus pouch, O = ovary, OS = oral sucker, P = pharynx,

ovarian; Laurer's canal absent; seminal receptacle absent; uterus preovarian, extending dorsal to acetabulum; metraterm muscular, terminal portion armed with spines 4 to 5 in length, opening into genital pore; genital pore immediately preacetabular. Vitellaria follicular, extending dorsally, ventrally, and laterally, from midlevel of anterior caecal diverticula to posterior extremity; vitelline reservoir conspicuous, subtriangular, dorsal to posterior part of ovary; common vitelline duct joining oviduct immediately posterior to ovary. Eggs triangular in cross section, 89.7 (80.0–97.5) long by 48.7 (42.5–55.0) in greatest width; excretory vesicle tubular, joining caeca to form uroproct; pore terminal.

TYPE HOST: *Mesoplodon stejnegeri*, the beaked whale.

TYPE LOCALITY: Pacific Ocean, off the Washington Coast.

SITE OF INFECTION: Liver sinuses.

COLLECTION DATE: 15 October 1981.

HOLOTYPE: USNPC No. 83305.

PARATYPES: USNPC No. 83306, Beltsville, Maryland; California Academy of Sciences Collection, San Francisco, California CASIZ No. 092497; and corresponding author's collection, C.S.U. Chico.

ETYMOLOGY: The specific epithet *macrorchis* indicates large (*macro*) testes (*orchis*).

Discussion

Salvador et al. (1996) reviewed the taxonomy of Campulidae and compared morphology of 217 specimens from all 7 genera. They concluded that 4 subfamilies are valid (Orthosplanchninae, Campulinae, Lecithodesminae, and Hunterotrematinae). The subfamily Orthosplanchninae was created by Yamaguti (1958) to include campulids with caecae not laterally diverticulate posteriorly but with profuse vitellaria extending the entire length of the caecae (*Orthosplanchnus* and *Oschmarinella*). The new species has profuse vitellaria and no lateral posterior intestinal diverticula. The genus *Orthosplanchnus* was erected by Odhner (1905) and the genus *Oschmarinella* in 1947 by Skrjabin; the latter differs from the former by being elongate and having a prepharyngeal pouch and a uroproct. *Oschmar-*

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PP = prepharyngeal pouch, PT = posterior testis, U = uterus, UP = uroproct, V = vitellaria.

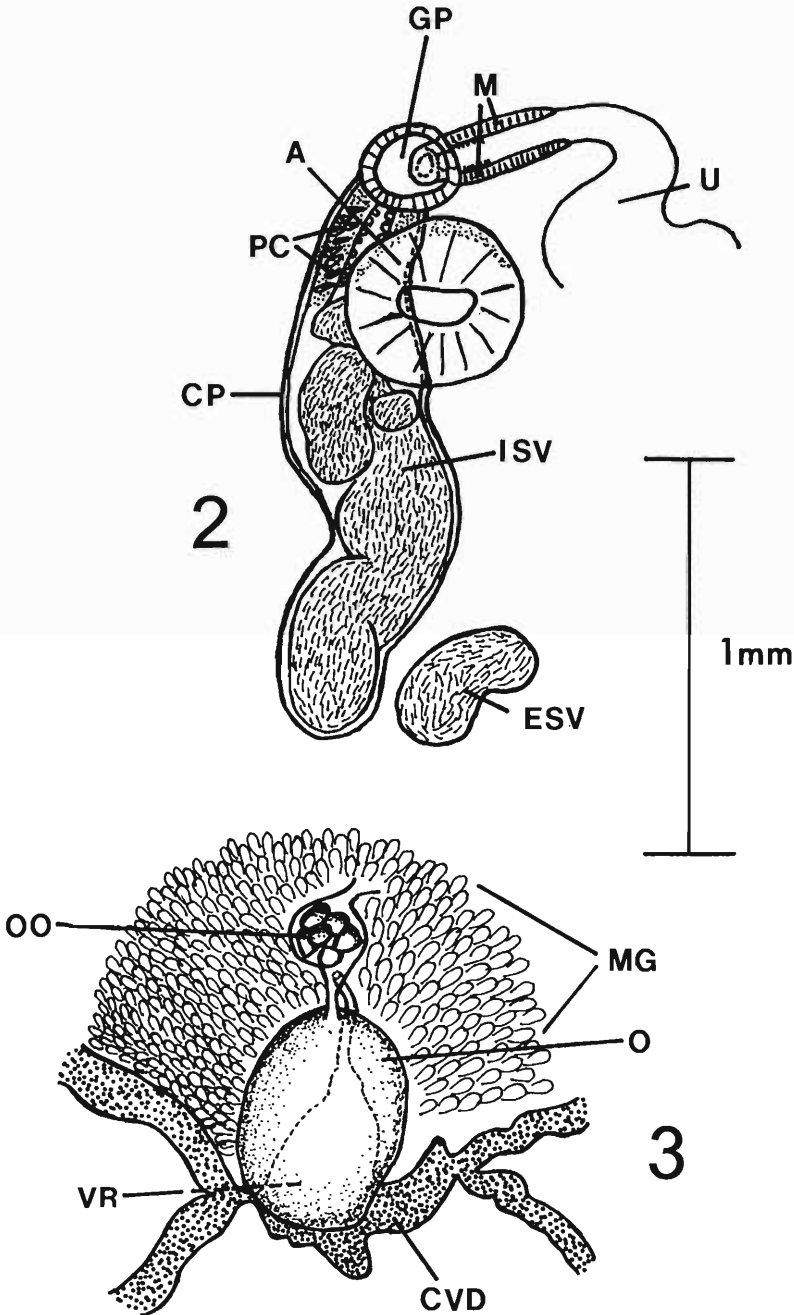


Figure 2. Terminal genitalia, ventral view. A = acetabulum, CP = cirrus pouch, ESV = external seminal vesicle, GP = genital pore, ISV = internal seminal vesicle, M = metraterm, PC = prostatic complex, U = uterus.

Figure 3. Ovarian complex, ventral view. CVD = common vitelline duct, MG = Mehlis' gland, O = ovary, OO = ootype, VR = vitelline reservoir.

Table 1. Comparative measurements of *Oschmarinella* species.

	<i>O. macrorchis</i> present study	<i>O. sobolevi</i> Skrjabin, 1947	<i>O. laevicaecum</i> Yamaguti, 1942	<i>O. mascomai</i> Raga, 1986
No. of specimens	20	6	5	5
Body				
Length (mm)	16–22 (18.9)*	32–34.5	7.5–10.0	8.58–10.6 (9.39)
Width (mm)	2.2–2.8 (2.4)	4.2–4.8	0.75–1.3	1.02–1.60 (1.33)
Oral sucker, maximum diameter	540–650 (590)	800 × 1200(W)	380–450	437.2–556.5 (484.9)
Pharynx				
Length	420–540 (490)	750	250–280	277.9–278.2 (283.3)
Width	250–330 (300)	—	110–200	222.6–301.7 (258.1)
Acetabulum, maximum diameter	480–580 (530)	1,000	350–380	492.9–472.4 (513.5)
Ovary, maximum diameter	494–728 (590)	1,200	210–330 × 220–350	286.2–397.5 (346.6) × 294.1–596.2 (446.7)
Anterior testis				
Length	2,200–4,000 (3,300)	5,400	—	1,040–1,160 (1,112)
Width	1,000–1,800 (1,420)	3,000	—	540–900 (667.1)
Posterior testis				
Length	3,200–5,000 (4,190)	4,700	—	1,120–1,440 (1,308)
Width	800–2,000 (1,370)	3,000	—	420–860 (720)
Eggs				
Length	80–98 (90)	110–120	63–81	80–84 (81.33)
Width	43–55 (49)	62–66	42–48	40–42 (40.66)

* Means are given in parentheses. All values are in micrometers unless otherwise noted.

inella macrorchis sp. n. clearly belongs in the family Campulidae, subfamily Orthosplanchninae, genus *Oschmarinella*. It has a prepharyngeal pouch, eggs triangular in cross section, a uroproct, and caecae without posterior lateral diverticula, and it was found in the liver of a marine mammal.

Oschmarinella macrorchis sp. n. differs from the 3 established species of *Oschmarinella* (Table 1). It is significantly smaller than *O. sobolevi* (Skrjabin, 1947) in every measurement except posterior testis; it is larger than *O. laevicaecum* (Yamaguti, 1942) in every measurement; and it is larger than *O. mascomai* (Raga, 1986) in body length, body width, pharynx length, ovary diameter, and anterior and posterior testes length. The posterior testis of *O. macrorchis* sp. n. is significantly (three times) larger than that of *O. mascomai*. The 2 smaller species of *Oschmarinella* are found in dolphins, while *O. macrorchis* sp. n. and *O. sobolevi* are found in whales of the family Ziphiidae.

We examined 11 specimens of *C. oblonga* borrowed from the Harold W. Manter Laboratory, University of Nebraska State Museum, and another 32 processed by us. The Nebraska specimens were densely spinose, while some pro-

cessed by us were uniformly spinose and others had patchy spine distribution or no visible spines. Adams and Rausch (1989), in their review of 3 genera of campulids, commented that tegumental spines are often lost when fixation is delayed. Thus, we surmise that the lack of spines in this new species may be a preparation artifact.

In contrast, we did observe Laurer's canal in whole specimens of *C. oblonga* but did not observe it in our new species, either in whole worms or sectioned specimens.

Acknowledgments

We wish to thank the Washington Department of Game for use of their facilities for sample storage, examination, and processing, and the following individuals for their assistance with host specimen collection: Richard Beach, Steven Jeffries, Stephen Treacy, and Anne Geiger.

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Obituary Notice

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27th Vice President, 1961

45th President, 1962

Anniversary Award, 1971

Life Membership, 1975